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BEGINNERS' WORKSHOP

In the latest episode of our series covering the essentials of personal computing, Mike Hardaker unravels the mysteries of the AUTOEXEC.BAT file and its partner in crime, CONFIG.SYS.

You may remember a few issues ago I mentioned a special batch file called AUTOEXEC.BAT. Judging by the letters I have received so far, this file seems to be the cause of more confusion than any other basic aspect of the PC.

In essence, it is just like any other batch file – it automates the process of running through a sequence of commands to save you having to type them all in. AUTOEXEC.BAT has one peculiarity, however. It is executed automatically every time you start up the PC or reboot it using [Ctrl][Alt][Del]. That doesn't make it any more complicated than an ordinary .BAT file, though – merely calling it AUTOEXEC.BAT is enough for MS-DOS to run it everytime it restarts.

Nevertheless, since it is specifically for holding your start-up procedures this means it tends to hold some command statements which are rarely seen elsewhere. These control the basic computing environment and, if setting up a PC from scratch, you will need to know how to write an AUTOEXEC.BAT. However, even if your machine has been set up with a dealer and seems completely fine it is useful to understand your AUTOEXEC.BAT – you may need to change it one day thanks to a new software or hardware purchase (or re-write it if an accident erases it).

WHERE?

You will find AUTOEXEC.BAT in the root directory of your 'boot' disk. If your PC starts automatically from the hard drive this will almost certainly be the root directory of the C-drive. If you boot from floppy (using a disk which is probably labelled 'system disk' or even just 'MS-DOS') it will be in the root directory of this disk (usually run from the A-drive). If your computer doesn't have AUTOEXEC.BAT in C:\ or A:\ (after checking the right disk is in the floppy drive, of course) don't panic – it probably hasn't been set up on your PC, and MS-DOS doesn't need it to run in a simple way.

WHAT?

View the contents of AUTOEXEC.BAT (if you have it) by typing:

```
TYPE AUTOEXEC.BAT [enter]
```

Depending on what release of MS-DOS (or PC-DOS for IBM users) you have, you will see various commands.

AUTOEXEC.BAT can include any MS-DOS commands, but there are some which tend only to be seen in this file. They include:

1. **ECHO OFF** – this is merely the message to MS-DOS that it is not to show the commands on screen as they are being processed.

2. **PATH=** – this is used to define the 'path' which MS-DOS will follow when searching for executable files. In raw MS-DOS, you can only run a program if you are in the same directory as it or if you define its directory when you enter the command to run it. So, if you have a program called GO.EXE in the C:\PROGS directory (say) you will only be able to run it from its own prompt, or by including the directory as part of the command thus:

```
C:\PROGS\GO [enter]
```

The PATH command lets you tell MS-DOS to look elsewhere for programs. You do this by including the directory names after the PATH=, separated by semicolons. This means that if your AUTOEXEC.BAT includes the line:

```
PATH=C:\;C:\PROGS;C:\DOS;C:\GAMES;
```

You can enter `GO` at any prompt and MS-DOS will (after checking the current directory) look in the root directory, C:\PROGS, C:\DOS and C:\GAMES for a file called GO.COM, GO.EXE or GO.BAT (looking through the directories in the order given for files in the above order of precedence).

3. **PROMPT** – this tells MS-DOS what you want to see at the left-hand side of the screen to prompt you for information. The standard prompt is simply the drive name followed by '>'. The most common prompt is `PROMPT $P$G`. This gives you the current path ($P) followed by a greater-than sign ($G). So if you are in the C:\DOS directory you will see C:\DOS>. PROMPT is extremely flexible and

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CONFIG.SYS

There is another file which MS-DOS looks for every time it is started: CONFIG.SYS. This does not contain instructions which can be run from the command line, but information which allows the system to redefine its lowest level of configuration (since its a batch file, you can run AUTOEXEC.BAT at any time simply by entering AUTOEXEC. CONFIG.SYS can only be run at start-up.

These are the items you are most likely to find in CONFIG.SYS:

1. FILES= This tells you how many files MS-DOS can have open at any one time. You may think you only ever have one file open, but the operating system does some tricky things in the background which involve a far larger number. FILES=30 is a reasonable setting in general. Each open file eats up a bit of memory, so if you find some applications won't run for you, throwing up an 'insufficient memory' message, try reducing this figure.

2. BUFFERS= Although they perform a different role, it's best to think of buffers as being like files. Again, 30 is a good number but 10 is adequate in many cases – especially if you have memory-hungry applications.

3. COUNTRY= This is described in the main text under 'National Language Support'.

4. DEVICE= The MS-DOS operating system can be upgraded 'in flight' by adding device drivers. These tell the system about various items which go beyond the basic MS-DOS specification and have the file extension .SYS. The most commonly seen handle mice and special memory managers.

includes many special characters (prefaced by '$') which you can use. For example, if you want your prompt to give you today's date with the current time on the next line followed by 'Get on with it, Mike:' you could put:

```
PROMPT $D$_$T$_Get on with it, Mike:
```

into your AUTOEXEC.BAT. These can get on your nerves after a while.

4. **MODE** – this command is often seen in AUTOEXEC.BAT files and is used to define the configurations of printers, serial ports and displays. It is often the last command in the AUTOEXEC.BAT file:

```
MODE CO80
```

which says that colour is enabled and text should be displayed in 80-column format.

5. **APPEND** – this is similar to PATH, but applies to data files rather than .COM, .EXE and .BAT files. It is only available on some versions of MS-DOS (all, from version 3.3) and only works in conjunction with a few programs.

6. **BREAK** – this tells MS-DOS how often it should check for the [ctrl][C] key sequence which is used to interrupt programs or batch files. The default is OFF, which means the operating system only looks for [ctrl][C] when using the printer, display or serial port. BREAK ON in AUTOEXEC.BAT means it also looks for the sequence when a disk is being accessed.

7. **VERIFY** – this can be used to check that a file has been written accurately to disk. The default is OFF, but if you have VERIFY ON in AUTOEXEC.BAT every process of writing to disk will be checked. This slows down your system's performance but gives extra security.

8. **FASTOPEN** – (MS-DOS 3.3 onwards), this keeps a record of the most recently-accessed files and directories in memory. Normally MS-DOS has to search on disk whenever you want a file. With FASTOPEN loaded, there's a good chance that the information you need will be in (faster) RAM. You have to specify how many directory entries for each disk are to be kept in RAM, so the command line looks something like:

```
FASTOPEN C:100
```

NATIONAL LANGUAGE SUPPORT

9. MS-DOS is an international operating system which can be adapted to reflect the conventions of other countries. In its raw form, however, it assumes that it is running on a US system, which means a US keyboard and American date formats (M/D/Y). Changing this to reflect the conventions of the UK involves one of two approaches depending on whether or not you've a recent version of MS-DOS .

First, let's look at the early versions: MS-DOS 3.2 and before. To get your PC to recognise the keyboard as British, you have to enter the command KEYBUK. This is a program which lives on the MS-DOS disk, so if your MS-DOS files are all in a directory called C:\DOS, your AUTOEXEC.BAT will contain:

```
CD\DOS
KEYBUK
```

or

```
\DOS\KEYBUK
```

This command gives you a pound sign at [shift][3] instead of the hash (#) sign.

The second thing we want to change is the way MS-DOS displays the date, so it follows the European convention of D/M/Y. This requires a command in the CONFIG.SYS files (see the separate panel) called COUNTRY. For the UK the full command is COUNTRY=044. COUNTRY also holds information about default currency symbols and numeric formats which can be used by applications. COUNTRY is only available with version 3.0 of MS-DOS and after. Before that time you have to put up with American date formats unless you have IBM's PC-DOS, in which case the WTDATIM command can be put into AUTOEXEC.BAT.

Things get rather more complicated with versions 3.3 and 4 of MS-DOS. Let's start with CONFIG.SYS this time. It still uses COUNTRY, but this time the syntax is a bit more complicated. COUNTRY now requires a file called COUNTRY.SYS, so the entry in CONFIG.SYS should look like this:

```
COUNTRY=044,,C:\DOS\COUNTRY.SYS
```

If there are more numbers between the commas after 044 in your example, don't worry. The commas tell the system to use a UK default number. Obviously, if COUNTRY.SYS on the MS-DOS disks) is in a different directory to C:\DOS, put in the right directory.

Now, back to AUTOEXEC.BAT. To define the keyboard layout, KEYBUK is replaced by KEYB. This uses a file called KEYBOARD.SYS which holds the details of the various countries' keyboards. Your AUTOEXEC.BAT should contain a line which looks something like this:

```
KEYB UK,,C:\DOS\KEYBOARD.SYS
```

This assumes that KEYBOARD.SYS is in a directory called C:\DOS and also that KEYB.EXE is in the default directory or that a PATH command (see above) has already put its directory into the default path. Remember that the PATH command won't do for KEYBOARD.SYS because it's not a program file.

There are some other commands associated with language support which you may see. These include DEVICE=DISPLAY.SYS (together with some parameters) in CONFIG.SYS, with NLSFUNC and MODE CON CP in AUTOEXEC.BAT – both with loads of extra parameters. These lines are not essential except in very rare cases, but having them there doesn't do any harm.

10. **VER** – quite simply, this tells you what version of MS-DOS you have installed. Many people like to have this command at the end of AUTOEXEC.BAT.

11. **CLS** – stands for CLear Screen. It is a common practice to place this command at the very end of an AUTOEXEC.BAT to get rid of all the garbage left on the display by the previous commands, leaving only a simple C:\>.

Not all these commands will appear in every AUTOEXEC.BAT, as a glance at the examples on the *SuperDisk* will show. Nevertheless, these are the key commands you are likely to see in your own file. There may well be extras, but these will tend to be running specific programs which are just as likely to be run from the command line. ●

HELP US TO HELP YOU

Why not take this opportunity to ask all those niggling questions to which you have been unable to find a satisfactory answer.

There's space here for three but if your list is longer, please write them on a separate sheet. Answers will either be incorporated into future articles or answered on this page.

1 ....

2 ....

3 ....

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